

### Patent Claims

1. A method for the separation of residual gases and working fluid in a combined cycle water/steam process  
5 which, using steam as working fluid and other liquid and/or gaseous fuels, provides for multi-stage compression of the working fluid and multi-stage expansion of the mixture consisting of working fluid and reaction products of the other liquid and/or  
10 gaseous fuels, the energy supply in the form of fuels being provided directly before or at the blading of selected turbine stages, characterized in that the expanded exhaust gas (6) from the high-pressure turbine stage (19) is subjected to a cooling process before  
15 being compressed again, in that the cooling of the expanded exhaust gases (6) from the high-pressure turbine stage (19) is carried out at least to the condensation temperature of the steam contained in the exhaust gas (6), in that the uncondensed parts of the  
20 exhaust gas (6) are then carried off from the combined cycle water/steam process, and in that the condensation of the working fluid, the leading-off of uncondensed residual gases (25), the expansion of the working fluid condensate and the evaporation of the condensed working  
25 fluid are carried out in a residual gas separator (10) connected upstream of the multi-stage turbocompressor (15) and the low-pressure turbine stage (22).

2. The method for the separation of residual gases  
30 and working fluid in a combined cycle water/steam process as claimed in claim 1, characterized in that the cooling process for the expanded exhaust gas (6) leaving the high-pressure turbine stage (19) is carried out in multiple stages.

35

3. The method for the separation of residual gases and working fluid in a combined cycle water/steam process as claimed in claim 2, characterized in that

the multi-stage cooling of the expanded exhaust gas (6) leaving the high-pressure turbine stage (19) is carried out first in the heat exchanger (17) and then in the condensate preheater (20) and in the low-pressure steam/exhaust gas cooler (21).

4. The method for the separation of residual gases and working fluid in a combined cycle water/steam process as claimed in one of claims 1 to 3, characterized in that the evaporation heat required for converting the condensate (12) into the working fluid is obtained from the condensation heat to be dissipated.